

Application No. 10/587,269
Reply to Final Office Action of April 18, 2008

DISCUSSION OF THE AMENDMENT

The independent claims have been amended from plural to singular format, and appropriate Markush terminology inserted. No change in claim scope is intended.

No new matter is believed to have been added by the above amendment. With entry thereof, Claims 1-4 and 6-14 will remain pending in the application.

REMARKS

The rejection of Claims 9 and 10 under 35 U.S.C. § 102(b) as anticipated by US 5,641,855 (Scherr et al), is respectfully traversed.

Claim 9 is drawn to a process for the preparation of a water-soluble or water-dispersible compound comprising:

- i) crosslinking of a compound selected from the group consisting of polyalkylenepolyamines, polyamidoamines grafted with ethyleneimine, polyether-amines, and mixtures of said compounds as component Aa,

with

a compound selected from the group consisting of at least bifunctional crosslinkers having, as functional group, a halogenhydrin, glycidyl, aziridine or isocyanate unit or a halogen atom, as component Ab;

and

- ii) **reaction of the product obtained in step i) with** a compound selected from the group consisting of monoethylenically unsaturated carboxylic acids, salts, esters, amides or nitriles of monoethylenically unsaturated carboxylic acids, and mixtures thereof, as component Ac.

(Emphasis added.)

Thus, the process of Claim 9 requires first reacting components Aa and Ab to form a reaction product, and then reacting this reaction product with component Ac.

Scherr et al discloses water-soluble condensation products of amino-containing compounds and crosslinkers, obtainable by reacting components described therein as compounds (a), (b) and (c) (paragraph bridging columns 1 and 2), which condensation products are disclosed as used as drainage, flocculation and retention aids in papermaking (column 2, lines 23-25; column 6, lines 27-29). Scherr et al discloses further that their

condensation products are prepared by reacting compound (a) with compound (b) and then reacting the product with compound (c), or by reacting the compounds (a), (b) and (c) all together (column 2, lines 16-23). In Scherr et al, compounds (a), (b) and (c) correspond to presently-recited components Aa, Ac, and Ab, respectively (except component Ac, which is narrower than compound (b).).

Thus, contrary to present Claim 9, which recites reacting components Aa and Ab to form a reaction product, and then reacting this reaction product with component Ac, using Applicants' nomenclature of Aa, Ab, and Ac, Scherr et al either reacts components Aa and Ac to form a reaction product, and then reacts this reaction product with component Ab, or reacts Aa, Ab and Ac at the same time.

Thus, it is clear that neither of the two alternative processes disclosed by Scherr et al anticipates Claim 9. Nor would it have been obvious to alter the order of reaction in Scherr et al since even a chemist with the most rudimentary knowledge of chemistry would appreciate that the product formed by altering the order of reaction would result in a different product.

In addition, since the presently-claimed process of Claim 9 necessarily produces a product different from that produced by either of the two processes of Scherr et al, the compound of Claim 10 is also necessarily different and thus patentable.

For all the above reasons, it is respectfully requested that this rejection be withdrawn.

The rejections under 35 U.S.C. § 103(a) of:

Claims 1-8 as unpatentable over US 6,573,228 (Littig et al) in view of Scherr et al;

and

Claims 11-14 as unpatentable over Littig et al in view of Scherr et al, and further in view of US 2003/0195135 (Boeckh et al), are respectfully traversed.

As recited in above-amended Claim 1, an embodiment of the present invention is a composition for treating hard surfaces comprising water, various optional components,

- a) at least one water-soluble or water-dispersible compound as component A,
which is prepared by reacting
 - aa) a compound selected from the group consisting of polyalkylenepolyamines, polyamidoamines grafted with ethyleneimine, polyether-amines and mixtures of said compounds, as component Aa,
 - ab) a compound selected from the group consisting of bifunctional crosslinkers having, as a functional group, a halogenhydrin, glycidyl, aziridine or isocyanate unit or a halogen atom, as component Ab, and
 - ac) a monoethylenically unsaturated carboxylic acids acid selected from the group consisting of acrylic acid, methacrylic acid, ethylacrylic acid, salts, esters, amides or nitriles of monoethylenically unsaturated carboxylic acids, and mixtures thereof; and
- b) at least one surfactant selected from the group consisting of anionic, nonionic, amphoteric and cationic surfactants, as component B.

As recited in Claims 11-14, other embodiments are drawn to a process for the treatment of hard surfaces. Claims 11, 13 and 14 require the composition of Claim 1. Claim 12 requires, in effect, only component A of Claim 1.

Prior to discussing the applied prior art, Applicants note that simply because the Examiner additionally relies on Scherr et al, thus rendering the previous grounds of rejection moot, does not moot all of the previous arguments, especially those with regard to Littig et al and Boeckh et al, which references continue to be applied. These arguments should have been addressed in the Office Action. Accordingly, the arguments that still apply are repeated below and/or modified as necessary.

Littig et al discloses laundry detergent compositions comprising so-called fabric enhancement polyamines which comprise one or more modified polyamine compounds selected from:

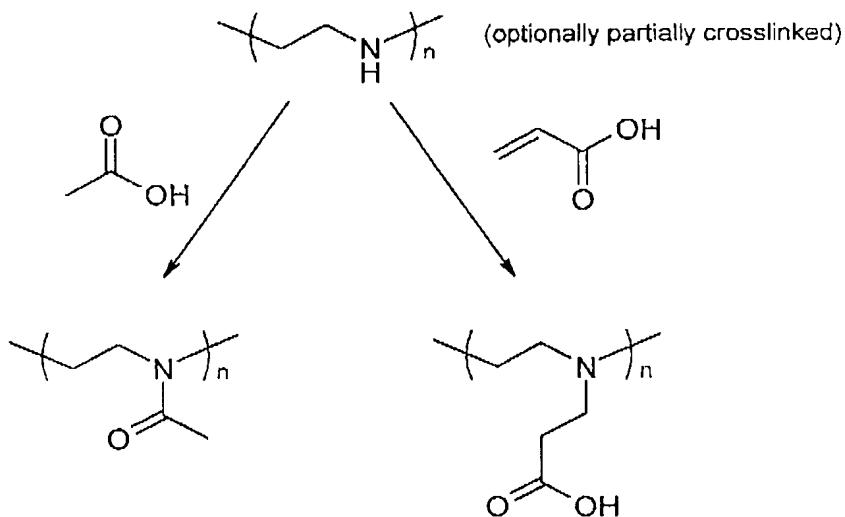
- i) $(PA)_w(T)_x$;
- ii) $(PA)_w(L)_z$;
- iii) $[(PA)_w(T)_x]_y[L]_z$; and
- iv) mixtures thereof (column 1, line 61 to column 2, line 1).

PA is a grafted or non-grafted, modified or unmodified polyamine backbone unit, T is an amide-forming polycarboxylic acid cross-linking unit, and L is a non-amide-forming cross-linking unit (column 2, lines 1-5). Suitable polyamine backbones (PA units) are, for example, polyalkyleneimines or polyalkyleneamines (column 3, lines 30-38). The polyamine backbone may be modified by grafting or capping (column 5, lines 13-16). The grafting is carried out for example with aziridine (ethyleneimine), caprolactam or mixtures thereof, as grafting agents (column 5, lines 35-37) and the grafting can be carried out prior to or after cross-linking with one or more T-units, whereby the grafting is preferably accomplished after cross-linking with the T-unit (column 5, lines 51-54). The capping is carried out by reaction of the PA-unit with a monocarboxylic acid. Suitable monocarboxylic acids disclosed are C₁-C₂₂ linear or branched alkyl, preferably C₁₀-C₁₈ linear alkyl carboxylic acids like lauric acid and myristic acid (column 5, lines 60-65), which are the only acids explicitly listed. The cross-linking units T are amide-forming cross-linking units, for example, dibasic acids such as succinic acid, maleic acid, adipic acid, glutaric acid, suberic acid, sebacic acid and terephthalic acid (column 6, lines 28-31). Non-amide-forming cross-linking units L are, for example, epihalohydrins (column 6, lines 54-56).

Littig et al discloses **no** mono-ethylenically unsaturated carboxylic acids selected from acrylic acid, methacrylic acid and ethylacrylic acid (which are not used as cross-linking

units according to the present invention), as cross-linking units or as capping units. Indeed, the monocarboxylic acids listed as capping units in Littig et al are not monoethylenically unsaturated short-chain acids but rather, saturated, preferably long-chain (C₁₀-C₁₈), acids (column 5, lines 60-65). Thus, in Littig et al, the reaction of a polyamine backbone with a saturated monocarboxylic acid as a capping unit results in an amide having an alkyl, preferably long-chain alkyl, unit. In the presently-claimed invention of Claim 1, on the other hand, the reaction of the polyalkylene polyamine with the monoethylenically unsaturated carboxylic acid produces a Michael-product obtained by a Michael-addition, because of the α,β -ethylenically unsaturation of the carboxylic acid employed.

In the following scheme the different reaction products by reacting polyethylene imine with a saturated monocarboxylic acid under formation of an amide and with an α,β -unsaturated carboxylic acid by a Michael-addition are shown:



It is shown that the water-soluble compound A according to the present invention and the amide according to Littig et al are clearly different. Because of the different modification of the polyamino compounds according to the present invention and according to Littig et al, the modified polyamine compounds according to the present invention and according to

Littig et al have different properties, especially concerning the interaction with surfaces, especially hard surfaces.

In effect, Littig et al is irrelevant, because their modified polyamine compounds are different from, and not suggestive of, presently-recited component A, and their disclosed utility is not the treatment of hard surfaces.

The disclosures and deficiencies of Scherr et al have been discussed above. In addition, Scherr et al neither discloses nor suggests the presence of a surfactant, as required in all claims except Claim 12. In addition, the only utility disclosed by Scherr et al, as discussed above, is with regard to papermaking.

It is not clear why one of ordinary skill in the art would combine Littig et al, which is drawn to laundry detergents, and Scherr et al, which is drawn to papermaking. Nor is it clear, without the present disclosure as a guide, why one of ordinary skill in the art would substitute the water-soluble condensation products of Scherr et al for the fabric enhancement polyamines of Littig et al, given the significant differences between them. In addition, it is not clear why one of ordinary skill in the art would add a surfactant to the water-soluble condensation products of Scherr et al for Scherr et al's utility in papermaking. In addition, neither Littig et al nor Scherr et al disclose or suggest the use of any of their compositions to treat hard surfaces.

Boeckh et al does not remedy the above-discussed deficiencies in the combination of Littig et al and Scherr et al.

Boeckh et al discloses particular cationically modified, particulate, hydrophobic polymers, the surfaces of which have been cationically modified by coating with cationic polymers, and the particle size of which is 10 nm to 100 μm , as additives to rinse, cleaning and impregnation compositions for hard surfaces (Abstract). Present component A, on the other hand, is recited as water-soluble or water-dispersible and for this reason alone, is

different from the hydrophobic polymers of Boeckh et al. Boeckh et al's hydrophobic polymers are obtainable, for example, by polymerization of, in effect, monoethylenically unsaturated monomers [0015ff], which are cationically modified by cationic polymers containing, for example, vinyl amine units, including polyethylene imines and crosslinked polyethylene imines, *inter alia* [0047]. Thus, it is clear that the polymeric backbone of Boeckh et al's hydrophobic polymers is a hydrophobic acrylate-type polymer. On the other hand, present component A is a water-soluble or water-dispersible compound having a backbone of polyalkylene polyamine, polyamidoamine, polyamidoamine grafted with ethylene amine, polyether amine, or mixtures thereof, recited as component Aa. Thus, the water-soluble or water-dispersible compounds are polyalkylene polyamines or similar polymers. Nor are these compounds cationically modified as required by Boeckh et al. While component A is recited in product-by-process form, it is clear that component A could not possibly be the hydrophobic polymers of Boeckh et al.

In the Final Rejection, in response to the above arguments about Boeckh et al, the Examiner appears to find that the cationic polymer of Boeckh et al is water soluble.

In reply, Boeckh et al's cationic polymer is the result of cationically modifying Boeckh et al's hydrophobic polymer, which is necessarily different from presently-recited component A herein.

In the Final Rejection, with regard to Claim 12, the Examiner finds that the cleaning compositions of Boeckh et al and Littig et al "comprises [sic] similar compounds that have the same backbone of polyamidoamine," and thus that it would have been obvious to use the composition of Littig et al for surface cleaning as disclosed by Boeckh et al.

In reply, the compounds of Boeckh et al and Littig et al are **not** similar, for reasons discussed above. Nor are the compounds of Scherr et al and Littig et al similar, for reasons discussed above.

In the Final Rejection, with regard to Claims 11 and 13, the Examiner still relies on similarities in backbone structure between the respective compounds of Littig et al and Boeckh et al as reasons for combining their disclosures, notwithstanding their different intended uses. While the Examiner finds that each use has cleaning in common, it is respectfully submitted that one skilled in the art would not combine disclosure for cleaning hard surfaces with disclosure for cleaning laundry but nevertheless, the respective compounds of Littig et al and Boeckh et al are fundamentally different, as discussed above.

Since Littig et al is drawn to laundry compositions, Scherr et al is drawn to papermaking compositions, and Boeckh et al is drawn to hard surface compositions, it is not clear why one of ordinary skill in the art would even combine them. Nevertheless, the fabric enhancement polyamines of Littig et al, the water soluble condensation products of Scherr et al and the cationic modified, particulate, hydrophobic polymers of Boeckh et al are sufficiently different from each other that one does not suggest the other.

For all the above reasons, it is respectfully requested that the rejections be withdrawn.

All of the presently-pending claims in this application are now believed to be in immediate condition for allowance. Accordingly, the Examiner is respectfully requested to pass this application to issue.

Respectfully submitted,

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